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in

Ledin I. (ed.), Morand-Fehr P. (ed.).
Sheep and goat nutrition: Intake, digestion, quality of products and rangelands

Zaragoza : CIHEAM
Cahiers Options Méditerranéennes; n. 52

2000
pages 179-181

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SUMMARY – The experiment measured the seasonal effects of goats and sheep grazing on the dynamics of garrigue vegetation over six years. Goats were chosen for their ability to eat bushes and trees. The ligneous cover (percentage of the total area and average height of each main plant species) of each paddock was measured before and after the grazing periods along 0.50 m x 20 m transects. Grazing lengths decreased by 61%, 34%, 25% and 11% for spring, summer, autumn and winter. *Genista scorpius* disappears if it is grazed in flowering period, *Juniperus oxycedrus* disappears whatever the season. Liveweight and body scores at the start and the end of the different periods did not differ either for goats or sheep.

Key words: Season, garrigue, grazing, browsing, sheep, goat.

RESUME – *"Variation saisonnière de la biomasse de garrigues pâturées par les moutons et les chèvres pendant six ans". L'évolution du couvert végétal de parcelles pâturées par des chèvres aux 4 saisons de l'année depuis 6 ans peut permettre de prévoir une conduite des animaux adaptée aux objectifs d'impact assignés au pâturage en utilisant son effet différentiel lié à la saison d'exploitation. Des transects (rectangle de 20 m x 0,5 m) ont été utilisés pour mesurer les variations de surface et de hauteurs des principales espèces ligneuses présentes. Le nombre de journées de pâturage a diminué de 61%, de 3%, de 25% et de 11% au printemps, en été, à l'automne et en hiver respectivement. Le* Genista scorpius *est plus fortement consommé au printemps au moment de la floraison, le* Juniperus oxycedrus *disparâit quelle que soit la saison. Il n'y a pas eu de variation de poids et d'état corporel des animaux qui ont couvert leurs besoins d'entretien.*

Mots-clés : *Saison, garrigue, pâturage, ovin, caprin.*

Introduction

The thousands of hectares of natural pasture called "garrigue" in the south of France are a result of fires during the summer. Sheep grazing leads to a build up of dry vegetation due to their avoidance of trees and shrubs and their low stocking rate. Economic conditions also preclude increased sheep stocking rate. The experiment examined how the introduction of goats would complement the sheep use of vegetation mainly through their ability to graze ligneous and other vegetation mostly refused by sheep. This was evaluated by measuring changes in vegetation dynamics at different seasons over a six year period.

Materials and methods

Four paddoks of one hectare were set up and each paddock was grazed by goats (25 heads) and sheep (20 heads) for a period of up to 3 months during six years at four times of year (spring, summer, autumn and winter). The animals were removed before the end of the 3 month period if vegetation became scarce. The vegetation had a large floristic diversity. The dominant ligneous (Lign.) species were *Quercus coccifera* (Que. coc.), *Rosmarinus officinalis* (Ros. off.), *Juniperus oxycedrus* (Jun. oxy.), *Genista scorpius* (Gen. Sco.) and *Thymus vulgaris*. The dominant herbaceous (Herb.) species were *Brachypodium ramosum*, *Festuca ovina*, *Bromus erectus*, *Brachypodium pinnatum*, *Aphyllanthes monspeliensis* and *Asphodelus cerasifer*. The ligneous cover (percentage of the total area and average height of each main plant species) of each paddock was measured before and after the grazing periods along 0.50 m x 20 m transects (Etienne, 1986).

All animals were weighed before and after grazing each experimental paddock. The body condition scores were evaluated at the same time.

Results and discussion

Over the six years length of grazing period decreased by 61%, 34%, 25%, and 11% for spring, summer, autumn and winter (Fig. 1).

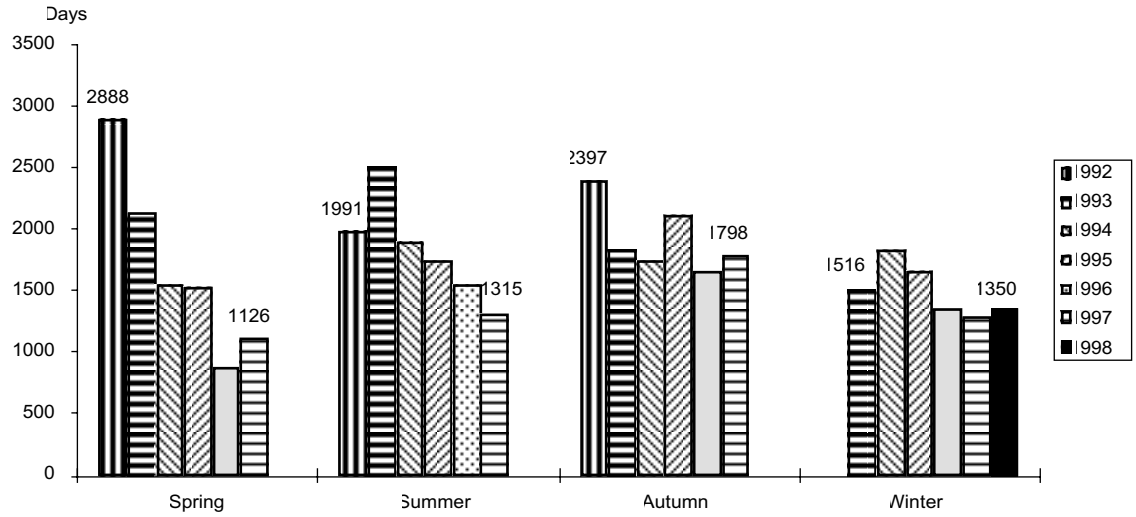

Fig. 1. Seasonal changes in duration of grazing over six years.

Genista scorpius disappeared when grazed during the flowering period and *Juniperus oxycedrus* disappeared when grazed at any season. Herbaceous species increased as a result of spring, summer and autumn grazing and *Rosmarinus officinalis* increased with spring and winter grazing (Fig. 2).

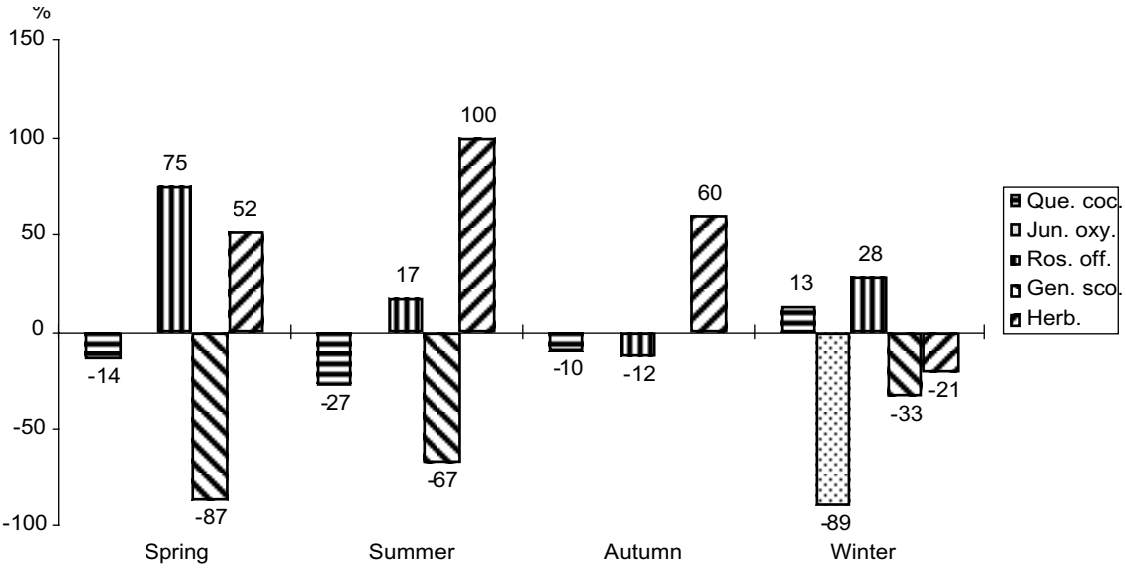

Fig. 2. Changes in vegetation dynamics for each season over six years.

The overall sheep and goat average body condition scores (Fig. 3) and liveweights (Fig. 4) at the start and the end of the different grazing periods did not differ for sheep or goats over the six years.

Figure 3 shows that there was a marked decrease in average body condition score from 2.4 to 2.1 in summer. The highest liveweight gain of about 3 kg was recorded in winter (Fig. 4).

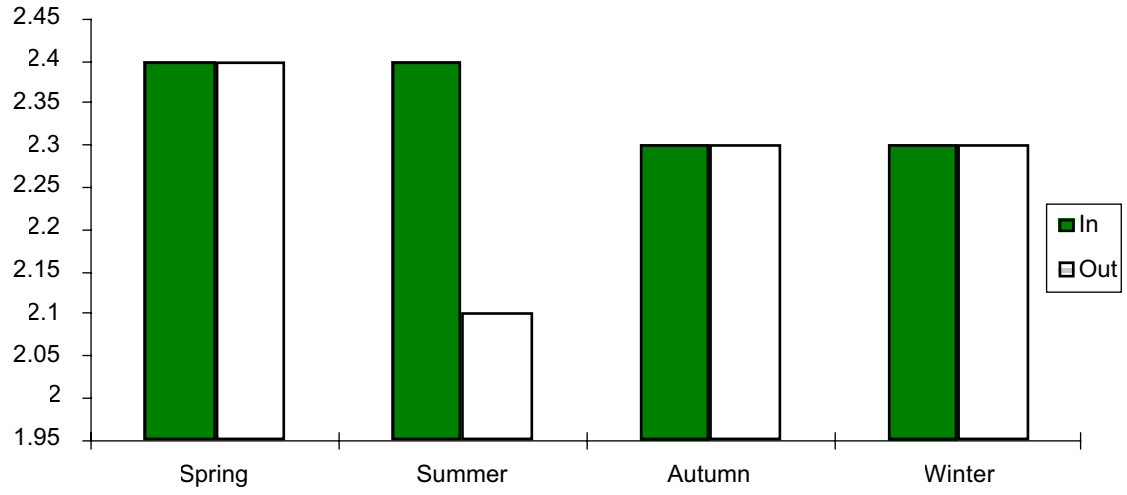

Fig. 3. Average body conditions scores for sheep and goats at the beginning and end of grazing for each season over six years.

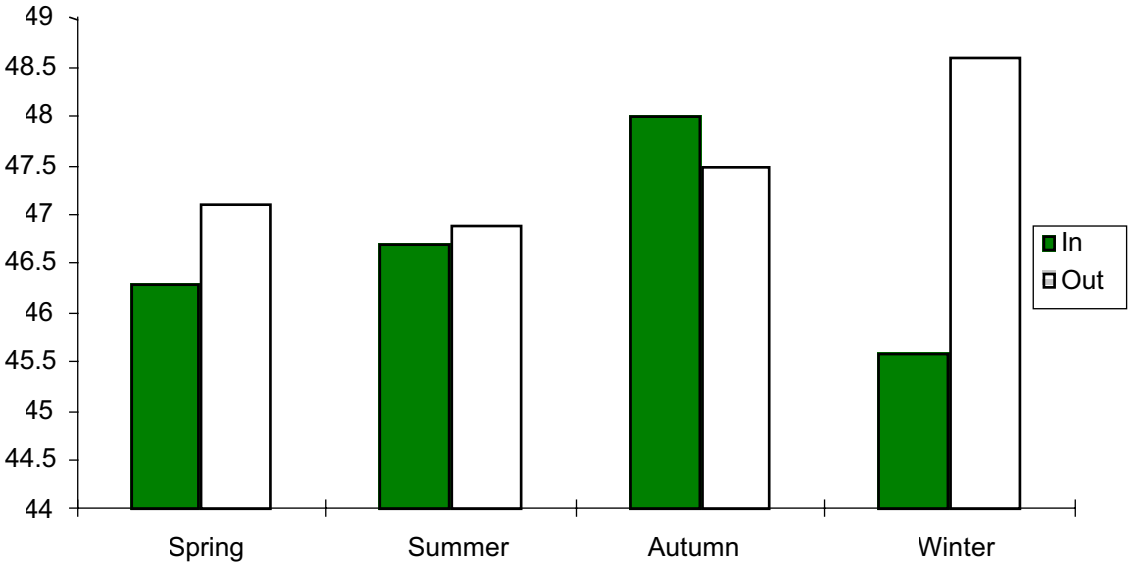

Fig. 4. Overall average (sheep + goats) liveweight changes from beginning to end of grazing periods for each season over six years (kg).

Conclusions

Mixed grazing by sheep and goats in spring and early summer gave improved results for reducing fire risk. Plant species choice varied with their physiological states. Rainfall could have some influence in spring and summer.

References

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